UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/761,441	01/16/2001	William Ho Chang	SLA.0274	5276

55376   7590   08/23/2005

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EXAMINER
SHAH, UTPAL D

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _08 February 2005_.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-13_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-13_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _21 July 2004_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Response to Amendment

1.   The amendment received on 02/08/2005 has been entered in full.

Response to Arguments

2.   Applicants arguments regarding the prior art rejections under Tai and Sato on pages 9-10 on the Amendment filed on 02/08/2005 have been fully considered but are not persuasive.

3.   In regards to claim 1, the applicant argues that combination of US patent 5,477,335 by Tai and US patent 5,930,009 by Sato et al. does not teach "...applying a three-dimensional color vector determinant to the misregistered pixel to resolve pixel misregistration;..." The examiner respectfully disagrees with the applicant. Sato provides an invention that relates to adjusting colors of inputted images. Sato further discloses that an adjustment matrix is used to adjust original image. Regarding applicant argument, Sato clearly teaches (col. 10, lines 13-26) that by performing matrix calculations on the values of the original pixel, the adjusted pixel can be calculated. The examiner interprets that the adjusted pixel is the resolved misregistered pixel. According to Sato the original pixel requires adjustment (or has been misregistered), and that adjustment is produced using the set-up matrix. The set-up matrix performs the adjustment necessitated by adding the direction of adjustment. Sato further teaches (col. 19-20) that the set-up matrix can be a color vector determinant. As is generally well known in the art of image processing, a color image consists of three channels, usually

Red, Green and Blue or Chrominance, Luminance and Hue, and these channels are combined to form a particular color. It is also known that color image processing involves vector or matrix that has at least three dimensions, one for each channel. Therefore, the examiner asserts that a color vector determinant would clearly teach having three-dimensions.

4.   In regards to claim 4, the applicant argues the applied art US patent 5,477,335 by Tai does not teach "checking gradient and luminance to determine whether a misregistered pixel is part of a character". The examiner respectfully disagrees with the applicant. Tai provides an invention that relates to scanning a document and the color signals generated by the scanner are transformed and each pixel is examined as to whether or not it is part of a text structure. Regarding applicant's arguments, Tai clearly teaches (col. 2, lines 56-67) checking the gradient and luminance to determine whether a misregistered pixel is part of a character. Tai discloses output of edge enhancement circuit and luminance to determine if the respective pixel is part of text. Tai further discloses using a high emphasis filter to detect edges. It is also well known in the art that an edge detection filter, like a high emphasis filter, concurrently finds the gradient of the image. Therefore, during edge enhancement Tai is also checking the gradient. Tai further discloses checking the luminance of the pixel (col. 3, lines 10-41). Tai makes known checking the luminance value of center with respect to the surrounding pixels to determine if the center pixel is part of text. In (col. 3, lines 52-59), Tai further discloses that a pixel is part of a text structure if there is high local contrast in the luminance

values among the pixels in the window. The examiner interprets that, since a text

structure does include characters, Tai discloses determining whether pixel is part of a

character.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 1, 2, 4, 6, 7, and 10 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tai (US 5,477,335) in view of Sato et al. (US 5,930,009).

Regarding claim 1, Tai discloses detecting a misregistered pixel (Col. 1, lines 13-

46; Figure 2), determining whether the misregistered pixel is part of a character (Col. 3,

lines 42-67, Col. 4, lines 1-4), and reducing the chrominance component of the

misregistered pixel to provide a corrected pixel (Col. 3, lines 32-65). Tai does not

appear to recognize applying a 3-D color vector determinant to the misregistered pixel

to resolve pixel misregistration. However, Sato et al. ("Sato") teaches that it is known to

apply a 3-D color vector determinant to resolve pixel misregistration (col. 10, lines 13-

26, Sato discloses that by performing matrix calculations on the values of the original

pixel, the adjusted pixel can be calculated. The set-up matrix performs the adjustment

necessitated by adding the direction of adjustment. Sato further teaches (col. 19-20)

that the set-up matrix can be a color vector determinant.)

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to have modified the detection of a misregistered pixel disclosed by

Tai to include applying a 3-D color vector determinant as taught by Sato because it is a

methodology routinely implemented in the art in order to adjust colors.

Regarding claim 2, Tai discloses identifying a pixel as being at an edge of an

image portion (Figure 2; Col. 3, lines 16-30).

Regarding claim 4, Tai discloses checking the gradient and checking the

luminance of a pixel. (Tai clearly teaches (col. 2, lines 56-67) checking the gradient and

luminance to determine whether a misregistered pixel is part of a character. Tai

discloses output of edge enhancement circuit (applicant uses gradient detect edges)

and luminance to determine if the respective pixel is part of text. The examiner

interprets that, since text could include characters, Tai discloses determining whether

pixel is part of a character).

Regarding claim 6, Tai discloses locating an edge pixel position and classifying

the edge position pixel as a text region (Col. 3, lines 38-67; Figure 2).

Regarding claim 7, the arguments analogous to those presented above for

claims 1, 2, and 4 are applicable to claim 7.

Regarding claim 10, the arguments analogous to those presented above for

claim 6 are applicable to claim 10.

7.   Claims 3, 5, 8, 9, and 11-13 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tai (US 5,477,335) in view of Sato et al. (US 5,930,009) as applied to

claims 1, 2, and 7 above, and further in view of Baxes (*Digital Image Processing*).

Regarding claims 3 and 8, Tai discloses identifying a pixel as being at an edge of

an image portion using a gradient edge detector including selecting an image kernel

filter (Col. 3, lines 42-57; Figures 3a, 3b, and 3c), setting a threshold, comparing the

image filter kernel to the prescribed threshold, and classifying the pixel as misregistered

if the image filter kernel is greater than the predetermined threshold (Col. 3, lines 42-

65). Tai does not specify having integer values from –2 to 2. However, Baxes teaches

that it is known to use a gradient edge detector including selecting an image kernel filter

having integer values from –2 to 2 (Pages 350-351). Therefore, it would have been

obvious to one of ordinary skill in the art at the time of the invention to have modified the

filter disclosed by Tai to include specifying integer values from   -2 to 2 as taught by

Baxes because it is well known and routinely utilized in the art and is a matter of design

choice.

Regarding claims 5 and 9, Tai discloses reducing the chrominance component of

the misregistered pixel to provide a corrected pixel (Col. 3, lines 32-65), but does not

appear to recognize using fuzzy chrominance reduction function. However, Baxes

teaches that it is well known to use fuzzy logic (Pages 170-171). Therefore, it would

have been obvious to one of ordinary skill in the art at the time of the invention to have

modified the chrominance reduction disclosed by Tai to include fuzzy logic as taught by

Baxes because it is a well known methodology routinely implemented in the art because

it provides improved classification results when many features are involved with

complex relationships that are difficult to describe using traditional logic techniques.

Regarding claim 11, the arguments analogous to those presented above for

claims 1, 3 and 4 are applicable to claim 11.

Regarding claims 12 and 13, the arguments analogous to those presented above

for claims 5 and 6 are applicable to claims 12 and 13, respectively.

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

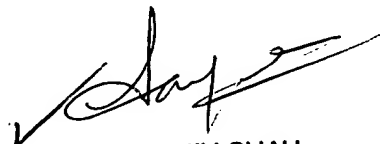than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Utpal D. Shah whose telephone number is 571-272-8568. The examiner can normally be reached on M-F (9 AM - 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Utpal Shah
Art Unit - 2625

SANJIV SHAH
PRIMARY EXAMINER